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Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A data transmission apparatus used in a multiple service ring including at least two nodes coupled to at least one aggregate pipe and at least one tributary, said apparatus comprising:

a tributary RX framer coupled to a tributary for deframing data frames received from said tributary and extracting a destination node address;

a TX framer for encapsulating the destination node address and the data received from the tributary into frames of the multiple service ring and transmitting the same along an aggregate pipe to a downstream neighbor node in the ring;

a RX framer for receiving and deframing data frames of the multiple service ring from a upstream neighbor node along an aggregate pipe to obtain at least a destination node address and actual data;

a filter for determining data frames for local node according to the destination node address, and forwarding the other frames to said TX framer so as to forward the other frames to a next node;

a tributary TX framer for encapsulating said data frames for local node into tributary data frames and sending the tributary data frames to a corresponding tributary; wherein each aggregate pipe comprises a N-ring structure consisting of N-M unidirectional ringlets and M unidirectional counter-rotating ringlets, where N and M are integers and $1 \leqq M < N$.

2. (Canceled)

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3. (Original) The data transmission apparatus according to claim 2, further comprising a ring management unit for controlling the use of the ringlets in one aggregate pipe, including assigning a specific (n-1)-th ringlet for transporting data packets in said (n-1)-th ringlet in unidirectional direction and a n-th ringlet for transporting control packets in said n-th ringlet in the opposite direction. where 1<n≤N.

4. (Original) The data transmission apparatus according to claim 3, wherein said n-th ringlet as a control channel of (n-1)-ringlet is also set default as a protection channel of (n-1)th ringlet in the case of fibre facility failure or signal degradation of (n-1)th ringlet.

5. (Previously Presented) The data transmission apparatus according to claim 1, further comprising a tributary identifier setting-up means for setting-up an identifier for indicating the originating tributary, and said tributary identifier are encapsulated together with the destination node address and the data received from the tributary into frames of the multiple service ring.

6. (Original) The data transmission apparatus according to claim 5, further comprising a tributary determining means for determining the tributary type and tributary No. from the data frames for local node, so as to send said tributary data frames to the corresponding tributary.

7. (Original) The data transmission apparatus according to claim 6, wherein said data frames of the MSR are FE/GE/10GE MAC frames.

8. (Original) The data transmission apparatus according to claim 7, further comprising a CWDM/DWDM unit for transmission of multiple aggregates, for the CWDM, the aggregate will be Fes, GEs and 10GE, and be operated at N=4/8/16; for the DWDM, the aggregate is 10GE with Wide Interface sublayer– SONET (Synchronous Optical Network) transmission, or using STM-16/OC-48 channel (into DWDM) in which STM-16/OC-48 carries GEs and FEs., and ringlet number, N, can be up to 1024.

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9. (Original) The data transmission apparatus according to claim 8, wherein said N=1, and M=0, which means the aggregate pipe include a single fibre ring, and all the data frames and control frames are transported in said single fibre ring.

10. (Original) The data transmission apparatus according to claim 1, wherein each aggregate pipe includes link and broadcast topologies.

11. (Currently Amended) A data transmission method used in a multiple service ring including at least two nodes coupled to at least one aggregate pipe and at least one tributary, said method comprising the steps of:

for data frames from a tributary,

receiving and deframing data frames from said tributary and extracting a destination node address; and

encapsulating the destination node address and the data received from the tributary into frames of the multiple service ring and transmitting the same along an aggregate pipe to a downstream neighbor node in the ring;

and for data frames from an upstream neighbor node along an aggregate pipe,

receiving and deframing data frames of the multiple service ring from the upstream neighbor node along the aggregate pipe to obtain at least a destination node address and actual data;

determining data frames for local node according to the destination node address, and forwarding the other frames to a next node; and

encapsulating said data frames for local node into tributary data frames and sending the tributary data frames to a corresponding tributary, wherein each aggregate pipe comprises a N-ring structure consisting of N-M unidirectional ringlets and M unidirectional counter-rotating ringlets, where N and M are integers and $1 \leqq M < N$.

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12. (Canceled)

13. (Original) The data transmission method according to claim 12, further comprising the step of controlling the use of the ringlets in one aggregate pipe, including assigning a specific (n-1)-th ringlet for transporting data packets in said (n-1)-th ringlet in unidirectional direction and a n-th ringlet for transporting control packets in said n-th ringlet in the opposite direction. where 1<n≤N.

14. (Original) The data transmission method according to claim 13, wherein said n-th ringlet as a control channel of (n-1)-ringlet is also set default as a protection channel of (n-1)th ringlet in the case of fibre facility failure or signal degradation of (n-1)th ringlet.

15. (Previously Presented) The data transmission method according to claim 11, wherein for data frames from the upstream neighbor node, said method further comprises the step of setting-up an identifier for indicating the originating tributary, and wherein said tributary identifier are encapsulated together with the destination node address and the data received from the tributary into frames of the multiple service ring.

16. (Original) The data transmission method according to claim 15, further comprising a step of determining the tributary type and tributary No. from the data frames for local node, so as to send said tributary data frames to the corresponding tributary.

17. (Original) The data transmission method according to claim 16, wherein said data frames of the MSR are FE/GE/10GE MAC frames.

18. (Original) The data transmission method according to claim 17, wherein multiple aggregates are used for CWDM/DWDM, for the CWDM, the aggregate will be FEs, GEs and 10GE, and be operated at N=4/8/16; for the DWDM, the aggregate is 10GE with Wide Interface

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sublayer– SONET (Synchronous Optical Network) transmission, or using STM-16/OC-48 channel (into DWDM) in which STM-16/OC-48 carries GEs and FEs., and ringlet number, N, can be up to 1024.

19. (Original) The data transmission method according to claim 18, wherein said N=1, and M=0, which means the aggregate pipe include a single fibre ring, and all the data frames and control frames are transported in said single fibre ring.

20. (Original) The data transmission method according to claim 11, wherein each aggregate pipe includes link and broadcast topologies.

21. (Original) The data transmission apparatus according to claim 3, wherein one of the N ringlets is set as a protection channel for the other ringlets.

22. (Original) The data transmission method according to claim 13, wherein one of the N ringlets is set as a protection channel for the other ringlets.